NOTES AND BRIEF ARTICLES

[*Unsigned notes are by the editor*]

Readers of MYCOLOGIA are invited to contribute to this department personal news items and notes or brief articles of interest to mycologists in general. Manuscript should be submitted before the middle of the month preceding the month in which this publication is issued.

A new method of isolating single spores in Petri dishes for transfer is described by Carl D. LaRue in the *Botanical Gazette* for October, 1920.

Volume 7, parts 4 and 5, of *North American Flora,* by J. C. Arthur appeared at the close of 1920. They include descriptions of 201 species of *Dicaeoma,* of the Aecidiaceae. This important genus of plant rusts comprises, according to Dr. Arthur, a total of 269 species.

The dry-rot of incense cedar is discussed by J. S. Boyce in Bulletin 871 of the U. S. Department of Agriculture. The attacks of *Polyporus amarus* are very severe, owing to forest fires and various mechanical injuries. Trees with sporophores or serious wounds should be promptly cut. The rotation for incense cedar, according to the author, must not exceed 165 years in the intermediate and 210 years in the optimum range.

In his excellent paper on Crown-gall of Alfalfa, published in the *Botanical Gazette* for July, 1920, Mr. O. T. Wilson suggests that, although Magnus was right in removing the causative parasite from the genus *Cladochytrium,* it is doubtful whether he was justified in placing it in *Urophlyctis.* The author concludes with some interesting remarks about the Chytridiaceae in general and their relationship to the Myxomycetes.

In a short paper on Porto Rican fungi in the *Botanical Gazette*

for November, 1920, F. L. Stevens describes *Linospora trichostigmae,* on *Trichostigma octandra*; *Trabutia portoricensis,* on *Cocolobis nivea*; the genus *Trabutiella,* with *T. cordiae* as its type; *Hyponectria phaseoli,* on *Vigna vexillata*; and *Zythia phaseoli,* on *Phaseolus.* A fuller description is also given of *Anthostomella rhizomorphae* (Ktz.) B. & V., collected on *Rhizophora mangle.*

A Crop Protection Institute has been organized under the National Research Council to bring together the scientist, the grower, and the business man for mutual consultation regarding problems connected with the growing and marketing of crops. It proposes to cooperate with existing organizations wherever possible, and to undertake work that has hitherto been overlooked or imperfectly done. The control is in the hands of a Board of Trustees, two thirds of whom are scientists.

An abundantly illustrated article on the early development of *Inocybe,* by Gertrude E. Douglas, appeared in the *Botanical Gazette* for September, 1920. The lamellae develop as in most of the gill-fungi except those of the *Amanita* type. No marginal veil is formed, but the ground tissue on the outside of the pileus fundament becomes the blematogen, or universal veil. Several species of *Inocybe* were used for this study, the fresh plants in various stages being fixed in chromo-acetic acid of medium strength, then imbedded in paraffin, and stained with fuchsin after treatment with tannic acid.

An important paper on the development of *Cyathus* and *Crucibulum,* by Lena B. Walker, appeared in the *Botanical Gazette* for July, 1920. Six plates, with 70 excellent figures, greatly enhance the value of this paper. The three species used, *C. fascicularis, C. striatus,* and *C. vulgare,* grew readily on artificial media, but only the first produced mature fruit-bodies. The peridioles originate in all three species at given centers, toward which the ends of filaments converge. The most marked difference between *Crucibulum* and *Cyathus* is in the structure of the walls of the

peridia. In *Cyathus* a middle layer is present which is entirely wanting in *Crucibulum.*

Bulletin of the New York State Museum, Nos. 219, 220, appeared in January, 1920. It contains a reprint of the report of the state botanist for 1886, which has been so difficult to secure because so few copies were originally printed. A paper on fungi by Dr. House includes descriptions of *Mycena filopes* (Bull.) Quél. and *Mycena Atkinsoni* House, and the following new combinations: *Lophiotrema Peckiana* (Sacc.) House, *Helminthosporium pedunculatum* (Peck) House, *Gloniopsis Gloniopsis* (Gerard) House, and *Stereum Willeyi* (Clinton) Burt.

The first number of the *Bulletin of the Yama Farms Mycological Club* appeared in September, 1920. It contains a description of Yama Farms; the origin and purposes of the Club; plans for the future; a list of books and papers on the larger fungi; and a list of officers, including John Burroughs, W. A. Murrill, H. D. House, C. F. Millspaugh, G. T. Moore, William Trelease, H. I. Miller, C. H. Kauffman, Howard A. Kelly, Robert T. Morris, and others. The Club intends to make Yama Farms, a vast virgin tract in the southern Catskills, an important mycological center, with facilities for collecting and studying the fungi and other interesting forms of plant and animal life. Mrs. O. B. Sarre is permanent secretary-treasurer, and she was assisted during the season of 1920 by Miss Grace O. Winter, a graduate of Pennsylvania State College.

Enzyme action in *Echinodontium tinctorium,* one of the most destructive heart-rotting fungi on conifers in the West, was briefly discussed by Henry Schmitz in the *Journal of General Physiology* for July 20, 1920. The culture of the fungus used in this study was obtained from a young sporophore by the tissue method. The sporophore was carefully washed with sterile distilled water, dried by means of sterile tissue towelling, and cut open. Small portions of tissue were taken from the interior of the fruiting body and transferred to potato agar slants. After

the fungus had made considerable growth, transfers were made from the agar slants to sliced sterile carrots in large Erlenmeyer flasks, and the cultures incubated for 3 months at a temperature of 32° C. The fungus makes comparatively slow growth both on hard potato agar and on the carrots. While still in an actively growing condition the fungous mats were removed from the flasks, and, when thoroughly dry, were finely ground. The following enzymes were found to be present in the fungus: Esterase, maltase, lactase, sucrase, raffinase, diastase, inulase, cellulase, hemicellulase, urease, rennet, and catalase.

A handsome paper on the mosaic disease of cucurbits by S. P. Doolittle, has appeared as Bulletin 879 of the U. S. Department of Agriculture. According to the author, this disease has apparently been present in the United States for nearly 20 years, but prior to 1914 its importance was practically unrecognized. It appears both in the field and in the greenhouse in nearly all sections where cucurbits are of commercial importance. Nearly all cultivated cucurbits are susceptible to it, but the cucumber crop seems to be most seriously affected, particularly in the Central States and the trucking regions of the South. The diseased plants develop a yellow mottling of the younger leaves, accompanied by a wrinkled or savoyed appearance. The older leaves gradually turn yellow and die, leaving the basal portion of the stem bare.

No visible causal orgainsm has been associated with cucurbit mosaic, and the disease appears to be unrelated to soil conditions. The juice of mosaic plants contains an infective principle, or virus; however,which possesses certain definite properties. The expressed juice of mosaic plants is rendered non-infectious if heated above 70° C. The power of infection is also destroyed by formaldehyde, phenol, and copper sulphate in 0.5 per cent solutions and by mercuric chlorid in a strength of 1:2,000. A 10 per cent solution of chloroform will also render the virus inactive, but neither 5 per cent chloroform nor 10 per cent toluene are effective.

The juice of mosaic diseased plants may be diluted to 1:10,000

and still retain the power of infection. The expressed juice of mosaic plants rarely remains infectious longer than 24 to 48 hours, and the virus is rapidly destroyed by desiccation. The infective principle, as far as it has been determined, possesses many properties of a living organism, and it appears possible that the disease may be caused by an ultramicroscopic parasite. The mosaic is highly infectious and can be produced by introducing the expressed juices or crushed tissues of a mosaic plant into slight wounds in healthy plants.

VOLUME 10 OF NORTH AMERICAN FLORA

The first three parts of this volume were issued some time ago. The manuscript for part 4, prepared by Kauffman and Overholts, will be ready for the printer within a few months. Part 5 will be chiefly devoted to *Cortinarius,* to be treated by Kauffman. Part 6 will continue the brown-spored and black-spored agarics; and part 7, the gasteromycetes and an index, concluding the volume.

Specimens of gill-fungi with brown or black spores, or any of the gasteromycetes, will be very gladly received from mycological friends. I do not care for *Poria* at present; this group will have to wait until volume 8, containing the Thelephoraceae, Clavariaceae, Hydnaceae, etc., is well started.

The determination of miscellaneous collections of the higher fungi must take second place with me henceforth, as my time for scientific work is limited. I have enjoyed this kind of work immensely during the past twenty years, and a vast number of interesting things have been added to the herbarium through collections sent in from widely separated localities.

If collectors wish to deposit sets of their larger fungi here without expecting reports until the various groups are worked, such specimens will be welcomed. In the case of special plants sent in for critical examination, please mention the species with which you would have them compared and also give microscopic characters, so as to facilitate comparison as much as possible.

W. A. MURRILL
Supervisor of Public Instruction

TWO SPECIES OF FUSCOPORIA

1. **Fuscoporia tenerrima** (Berk. & Rav.) comb. nov.

Polyporus tenerrimus Berk. & Rav.; Berk. Grevillea **1**: 65. 1872.
Poria tenerrima Cooke, Grevillea **14**: 115. 1886.

Described as below from Ravenel's Carolina collections on the bark of *Ulmus americana,* and known only from that region and on that particular host. It is rather difficult to decide where it belongs without seeing fresh, well-developed specimens, but its affinities appear to be with *Fuscoporia.*

"Entirely resupinate; very thin and tender, of a watery texture, tawny; pores very small, confluent, with very thin dissepiments."

Ellis, N. Am. Fungi *922*; Rav. Fungi Am. *710*; Rav. Fungi Car. **3**: *13*.

2. **Fuscoporia nebulosa** (Berk. & Curt.) comb. nov.

Polyporus nebulosus Berk. & Curt. Jour. Linn. Soc. **10**: 317. 1868.
Poria nebulosa Cooke, Grevillea **14**: 115. 1886.

Described as below from Wright's collections on dead wood in Cuba. Known only from one collection. The entire plant, including the tubes, is very thin and delicate. It apparently belongs in *Fuscoporia,* but I have not been able to examine it microscopically.

"Subiculo tenuissimo pulveraceo ferrugineo; hymenio fusco, poris parvis brevissimis angulatis, dissepimentis tenuibus rigidis integris."

W. A. MURRILL

A DOUBLE MUSHROOM

A peculiar specimen of the ordinary cultivated mushroom, *Agaricus campester,* was sent me last October from the Hupfel-Carrar Mushroom Plantation in the Bronx, with the following note:

"We are herewith sending you, under separate cover, a freak of nature in the form of a mushroom picked from our mushroom

cellars, which we thought would interest you. As you see, the stem grew right through the top of the same. This is the first occurrence we have had of this kind although we have picked hundreds of thousands of mushrooms since we started our cellar."

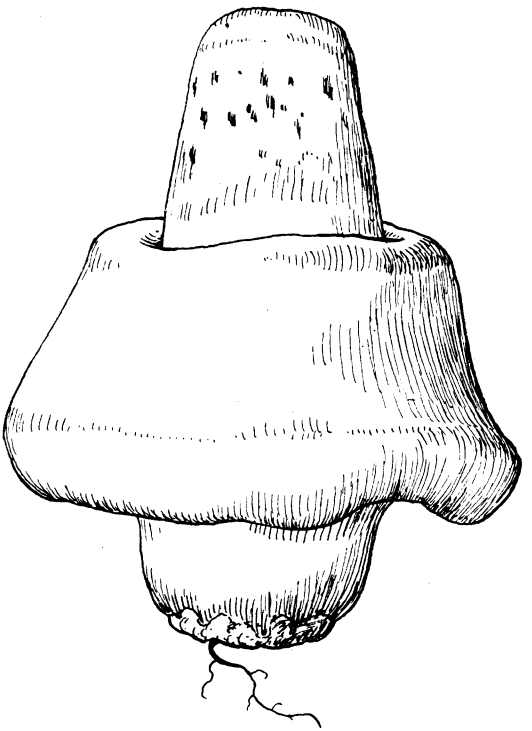

FIG. 1. Double mushroom, natural size

The accompanying sketches, reproduced natural size, was made by Miss Eaton from the fresh specimen. As may be seen in the section, there are two sets of gills, as well as two stems, as though the caps of two mushrooms occurring side by side had entirely grown together and the stronger mushroom had lifted the other into the air.

It is interesting to recall in this connection a figure, here reproduced, and a note that appeared in *Hardwicke's Science Gossip*, p. 209, 1866, which reads as follows:

"A TRIPLE MUSHROOM.—A physician of my acquaintance has a mushroom-bed in his cellar. A few weeks ago he *cut* one which was about five inches in

breadth, leaving the lower portion of the stem projecting from the bed. This afternoon he was surprised to find a peculiar double mushroom on the spot. It is formed of two mushrooms attached by their upper surfaces; the smaller one being placed in the inverted position on the upper one, and the cuticle of the two being continuous. The stem of the upper one was continuous with that of the large one which was cut off. The annexed sketch will give some idea of the nature of this curious monstrosity. The part above the dotted line represents the one cut off a few weeks ago; the part below is the double mushroom at present in my possession.—C. A."

While my attention was fixed on interesting morphological peculiarities like the above, a package of *Hypolysus Montagnei,* recently collected in Trinidad by Mrs. Britton, Miss Coker, and

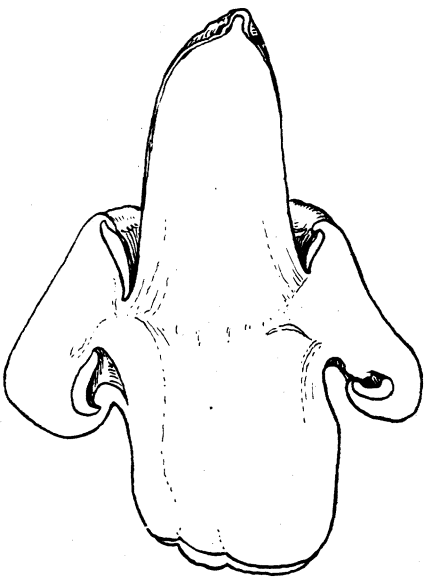

FIG. 2. Double mushroom in section, natural size

Mr. Rowland, was handed me for determination and I found that many of the small, goblet-shaped hymenophores had budded at the margin and produced from one to three secondary hymenophores with stalks and caps similar to the primary ones both in shape and size.

One frequently sees "buds" on the pilei of gill-fungi, usually bearing lamellae on their upper surface, but no trace of a stipe is ever present. In a pretty little specimen of *Marasmius* col-

lected last fall by Mr. George T. Hastings, a prominent "bud" had developed just at the apex of the pileus, looking as though the stipe had been prolonged and developed into a small, inverted, sessile pileus with lamellae similar to those of the normal

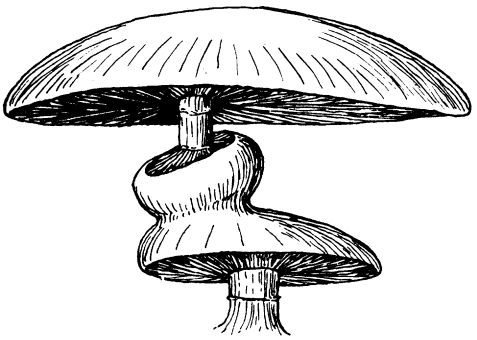

FIG. 3. Triple mushroom

pileus. The "buds," however, usually develop nearer the margin, those at the apex being very rare.

W. A. MURRILL

THE GENUS TINCTOPORIA

This genus was described in *North American Flora,* with *T. aurantiotingens* as its type. Two other interesting species belong here, one staining the substratum and the other not.

Hymenophore staining the substratum red.	
Hymenium black.	1. *T. albocincta.*
Hymenium rosy-isabelline.	2. *T. graphica.*
Hymenophore not staining the substratum; hymenium black.	3. *T. Fuligo.*

1. **Tinctoporia albocincta** (Cooke & Massee) comb. nov.

Poria albocincta Cooke & Massee; Cooke, Grevillea **20**: 106. 1892.

Poria Fuligo aurantiotingens Ellis & Macbr. Bull. Lab. Nat. Hist. Univ. Iowa 3^2: 191. 1896.

Tinctoporia aurantiotingens (Ellis & Macbr.) Murrill, N. Am. Fl. **9**: 14. 1907.

This species was studied by me in 1907, but several collections

have come in since that time, and I have discovered at Kew that another specific name has priority over the one I then used. This is *Poria albocincta,* described as follows from specimens collected on bark on the Island of St. Vincent:

"Tota resupinata, atro-cinerea, demum fissurato fatiscens; margine lato, niveo, pulverulento, tenui; tubulis circa 1 mm. longis, poris minutissimis, inconspicuis. Sporis ellipticis, 4 x 2 μ."

The only host mentioned in the new collections is *Ilex lucida.* Additional collections are:

Mexico, *Murrill 224*; Porto Rico, *Earle 116, Stevenson & Johnston 1482*; Guadeloupe, *Duss 574, 906.*

2. **Tinctoporia graphica** (Bres.) comb. nov.

Poria graphica Bres. Hedwigia **35**: 282. 1896.

Collected on dead sticks in Brazil by Möller and described as below. A portion of the type is in the Garden herbarium.

"Late effusa tenuissima, lilacino-carnea, margine rubello, subiculo nullo; tubulis vix ¼ mm. longis; poris elongatis, sinuosis, variis, dissepimentibus tenuissimus praeditis; sporae non visae. Hyphae subhymeniales 3 μ latae."

3. **Tinctoporia Fuligo** (Berk. & Br.) comb. nov.

Polyporus Fuligo Berk. & Br. Jour. Linn. Soc. **14**: 53. 1875.
Polyporus Ravenalae Berk. & Br. Jour. Linn. Soc. **14**: 53. 1875.
Polyporus Büttneri P. Henn. Verh. Bot. Ver. Proc. Brand. **30**: 129. 1888.
Poria glauca Pat. Jour. de Bot. **5**: 312. 1891.

Originally described from Peradenya, Ceylon, and several times collected in the Orient. *P. glauca* was described from Tonkin and *P. Büttneri* from Cameroon, Africa. This species is thin, annual, black, with a glaucous bloom in young stages, and does not stain the substratum red.

W. A. MURRILL

NOTES ON A FEW PAPERS READ AT CHICAGO

Among the many interesting papers presented at the twelfth annual meeting of the American Phytopathological Society held

at Chicago, December 28–31, 1920, the following may be briefly mentioned:

"The regional occurrence of *Puccinia graminis* on barberry," by E. C. Stakman, R. S. Kirby, and A. F. Thiel.

The common barberry does not rust in the Southern States and on the Pacific Coast. It was found that barberries would not become infected in the Southern States when they were inoculated with teliospore material which had been developed in the South; but when inoculated with teliospores from the North, they became very heavily infected. Excellent infection was obtained as early as March 16 by using northern material. Teliospores from the South which had been kept in the North during the summer and fall, however, caused infection in the South, while northern teliospores which had been kept in the South did not cause infection. Teliospores formed in the fall in the South caused infection in the following spring. Evidently, therefore, the reason why barberries do not become infected in the South is not because conditions are unfavorable for infection, but because practically no teliospores are viable in the spring.

"The effect of incipient decay on the mechanical properties of airplane timber," by Reginald H. Colley.

Standard tests conducted at the University of California by the Bureau of Plant Industry in cooperation with the Forest Service indicate marked differences in the effect of different fungi on the mechanical properties of airplane timber. Pieces of Sitka spruce and Douglas fir showing incipient decay were tested against matched sound pieces. The effect of *Fomes pinicola, Fomes laricis,* and *Polyporus schweinitzii,* which may be grouped together, was decidedly more marked than that of *Trametes pini.* Test sticks taken many feet ahead of the typical rot showed the weakening effect of *P. schweinitzii,* while sticks infected with *T. pini* gave as high or higher results than sound wood. Lumbermen have long recognized that wood infected with *T. pini* is strong even in the early pocket stage. Results point to need for more careful inspection and diagnosis of incipient decay in forest and mill to prevent the expense of working and finishing defective stock and its inclusion in the airplane.

"Valsa poplar canker," by Alfred H. W. Povah.

This disease, under the name *Cytospora chrysosperma* (Pers.) Fr. has been reported from the Southwest by Long and from the Northwest by Hubert. It has been found near Syracuse, New York, to cause serious injury and in some cases death to *Populus tremuloides* and *P. grandidentata* when weakened by fire. Field studies show infection of 68.4 per cent and mortality of 36.9 per cent. The perfect stage (*Valsa* sp.) has been found on the trunks of infected trees. Inoculation experiments with pycnospores on cuttings of *P. tremuloides, P. grandidentata,* and *P. caroliniana* have resulted in the production of typical pycnia, bearing the characteristic red spore horns, and the death of the cuttings. Cuttings not inoculated but kept in the laboratory where material bearing spore horns was exposed soon became infected and were killed.

"Lightning injury to *Hevea brasiliensis*," by Carl D. La Rue.

Lightning injury to the Para rubber tree (*Hevea brasiliensis*) rarely manifests itself in tearing or breaking of the trunks or branches. Usually a single small branch at the top of the tree dies first. From this point the death of the branch continues downward until the trunk is reached, then the trunk dies back until the root is reached and finally the whole tree is killed. Several days may elapse from the time the injury is first visible until the whole tree is dead. The progressive death of the tissues is extremely suggestive of invasion of the tree by some destructive organism. The injury has been attributed to *Diplodia* and the supposedly guilty organism named *Diplodia rapax*. Cultures by the author showed *Diplodia* to be the only organism constantly present, but this is now known to be secondary and not the cause of the death of the tree. The injury is most pronounced in the cambium region. Here the tissue becomes deep-purple in color and decays with great rapidity, making it easy to trace the progress of the injury. The purple coloration is regarded by the author as diagnostic for this type of injury. Frequently, trees surrounding the dying tree show injury in lesser degree, which develops later than of the tree most seriously injured, thus suggesting the spread of an organism from one tree to the other.

"A dry rot of the sugar beet caused by *Corticium vagum*," by B. L. Richards.

A serious and apparently undescribed rot of the sugar beet has been observed during the past season in a number of beet fields in northern Utah and southern Idaho. The disease, as it appears in the field, is confined to somewhat definitely delimited areas wherein every beet may become infected. The roots of the diseased beets show circular lesions characterized by very prominent alternating light and dark brown concentric rings. The disease is typically a dry rot. In the later stages a deep pocket, partly filled with a dry pulp composed of mycelium and decayed host tissue, results at each point of infection. With numerous points of attack the beet by harvest time may be converted into a dry, pithy mass. Numerous isolations from sugar beets, taken from a number of fields, have given what, from cooperative studies, appears to be a single strain of *Corticium vagum* B. & C. Inoculation shows this strain to be extremely virulent, and lesions have been produced on normal healthy beets with unusual uniformity.

W. A. MURRILL